

Evergreen MxProTM Processor Upgrade

180 and 200 MHz Versions

Frequently Asked Questions (FAQ)

Version 3.3, 4/9/98





Frequently Asked Questions

Compatibility

Q. Will the Evergreen MxPro work in my system?

A. The Evergreen MxPro supports 95% of single processor 75 MHz and higher speed Pentium[®] processor-based systems. For a current list of incompatible models, please contact customer service at 541.757.0934.

Q. Why can't the MxPro be used for 60 and 66 MHz systems?

A. The 60 and 66 MHz systems use a different socket than the Evergreen MxPro.

Q. Is the MxPro Socket-5 and Socket-7 compatible?

A. Yes. In comparison, the Intel[®] MMX[™] OverDrive[®] 200 does not support Socket 5.

Q. What does socket-5 and socket-7 mean?

A. Socket-5 systems support only 3.3-3.6 volt CPUs found in older systems. Socket-7 supports both 3.3-3.6 and the new 2.8 volt requirements of newer Pentium processors. The MxPro uses 3.3 to 3.6 volts which is available on all Pentium processor-based systems.

Q. Why can't I just buy an Intel or other MMX chip and plug it into my system?

A. Intel and other MMX processors are not always compatible with the BIOS and/or motherboard of older systems. Evergreen solves this with the MxPro by including a hardware adapter and BIOS update software for selected systems.

Q. Will it work with my software?

A. Yes. The Evergreen MxPro is compatible with PC software. Furthermore, the CPU used in the MxPro is fully certified by Microsoft as a Windows[®]-compatible CPU and is certified compatible by XXCAL (www.xxcal.com).

Q. Can the MxPro work in multiprocessor systems?

A. No.

Q. What is split-rail voltage?

A. Split rail is a term used to describe the newer CPUs with two voltage requirements – one for the internal CPU and one for the input/output to external chips. The MxPro CPU works with systems designed for any 75 MHz and higher speed Pentium processors.



Q. Which microprocessor is used in the MxPro?

A. The Evergreen MxPro currently uses the IDT WinChip C6 microprocessor. For more information on this processor, visit www.winchip.com.

Q. Who manufactures the microprocessor?

A. Integrated Device Technology, Inc. (IDT) manufactures the WinChip C6. Founded in 1980, IDT designs and manufactures high-performance integrated circuits for SRAM, communications products, logic and microprocessors. The company is ISO 9000 certified and currently employs 4400 employees. For additional information, please visit www.idt.com.

Q. Will it fit in my system?

A. The Evergreen MxPro fits most desktop and tower systems. It requires only 1.1 inches of clearance above your original CPU socket.

Q. Can the Evergreen upgrade be used for my portable?

A. No. The Evergreen MxPro is for desktops only.

Q. Can I do the upgrade myself?

A. Yes. The Evergreen MxPro is designed to be installed by PC end users. The upgrade installation takes approximately 15 minutes. The Evergreen installation guide has illustrated, step-by-step instructions. If you prefer, the Evergreen upgrade can be installed by a technician at a computer dealer near you.

Q. How do I remove the original Pentium processor?

A. Most Pentium processor-based systems have zero-insertion-force (ZIF) sockets that allow you to remove the Pentium processor using an easy-to-use lever.

BIOS

Q. How and why does the MxPro upgrade my BIOS?

A. The BIOS (Basic Input Output System) in many older systems does not support newer CPU architecture such as that used in the Evergreen MxPro. Therefore, Evergreen has developed BIOS updates to support selected older systems and motherboards. The BIOS updates are included in the INSTALL software and should only be used on systems where the install software recommends its use.

Q. Is the BIOS upgrade “plug and play”?

A. Since the MxPro only updates your existing BIOS, this is dependent on whether your BIOS already supports plug and play.

Q. Can I restore my original BIOS if I have problems?

A. Yes. The Evergreen INSTALL software makes a backup copy of the original BIOS and has a “restore” function.



- Q. What if I get a BIOS update from my PC manufacturer after I install the MxPro?
- A. The Evergreen BIOS update is installed to enhance system performance and recognize the Evergreen processor upgrade. You should not install the new manufacturer's BIOS since doing so will overwrite the Evergreen BIOS update. First check with Evergreen technical support for the correct procedure for your model.

Performance

- Q. Does the MxPro support MMX?
- A. The Evergreen MxPro runs software enabled for MMX instructions.
- Q. What is MMX?
- A. MMX stands for multimedia instructions. This feature has been added to the latest processors to improve performance on multimedia software such as games, graphics, sound and video applications.
- Q. The MxPro is MMX instruction compatible. Will this make all software run faster or just software designed specifically for MMX?
- A. The MxPro boosts processor performance for all software including software enabled for MMX instructions.
- Q. What are the recommended upgrade speeds for different speed systems?
- A. Users of 75 MHz and higher speed Pentium processor-based systems can upgrade to the MxPro for significant performance boosts on Windows and software enabled for MMX instructions. Use this chart for Evergreen recommendations.

Original Pentium Processor	Recommended MxPro Speed
75, 90, 100, 120, 133, 150 MHz	180 MHz (MxPro 180)
75, 90, 100, 120, 133, 150, 166 MHz	200 MHz (MxPro 200)

- Q. Will the MxPro 180 run at the full 180 MHz speed in my system?
- A. The Evergreen MxPro 180 utilizes the 60 MHz bus speed of 90, 120 and 150 MHz systems and delivers the full 180 MHz performance. Other speed systems can achieve full 180 MHz performance by changing jumper settings on the motherboard to set the bus speed to 60 MHz.
- Q. Will the MxPro 200 run at the full 200 MHz speed in my system?
- A. The MxPro 200 employs the 66 MHz bus speed of 100, 133 and 166 MHz systems to deliver the full 200 MHz performance. 75, 90, 120 and 150 MHz systems can achieve full 200 MHz performance by changing jumper settings on the motherboard to run the motherboard at 66 MHz. (Note: Some systems may not support jumper changes.)



Q. What performance improvement can I expect?

A. The MxPro performs like a new multimedia PC in older Pentium processor-based systems. For specific benchmarks, check the [Evergreen MxPro White Paper](#).

Q. How does the Evergreen upgrade compare to the Intel Pentium MMX OverDrive?

A. The Evergreen MxPro is faster due to its advanced architecture and 64 kilobyte internal cache as opposed to the 32 kilobyte cache in the Intel MMX OverDrive.

For specific benchmarks, check the [Evergreen MxPro White Paper](#).

In addition, the Evergreen MxPro has faster clock speeds and faster bus speeds than the Intel MMX OverDrive for some systems.

<u>Evergreen Solution</u>		
<u>Original System Speed</u>		<u>Evergreen MxPro Speed</u>
75, 90, 100, 120, 133, 150 MHz	à à à à à à	180 MHz (MxPro 180)
75, 90, 100, 120, 133, 150, 166 MHz	à à à à à à	200 MHz (MxPro 200)

<u>Intel Solution</u>		
<u>Original System Speed</u>		<u>MMX OverDrive</u>
75 MHz	à à à à à	150 MHz only
90, 120, 150 MHz	à à à à à	180 MHz only
100, 133, 166 MHz	à à à à à	166 or 200* MHz
* Does not support Socket 5		

Finally, the MxPro offers the best upgrade value.

Feature	Evergreen MxPro	Intel MMX OverDrive	Benefit
L1 Cache (internal)	64K	32K	Better overall software performance
MMX Instruction Compatible	Yes	Yes	Improved multimedia performance
Socket-5 Compatible	Yes	Not on 200 MHz version	Broader compatibility for your system
BIOS Update Software for Selected Systems	Yes	No	Higher compatibility for selected models



- Q. After installing the MxPro upgrade, the INSTALL disk displays a Mediastone benchmark. What is its purpose? How was it created?
- A. Mediastones is a performance and diagnostic tool created by Evergreen software engineers. Its purpose is to test the MMX instruction set of the Evergreen MxPro to show proper functionality and to show the optimum performance achievable on software instructions in MMX-enabled software.

Mediastones executes common integer operations, such as addition, multiplication, and shifts found in most programs. These types of operations are used extensively in games, spreadsheets, and most programs using graphics. Software developers may write programs that execute the same common instructions in a fraction of time by using the MMX instruction set built into newer CPUs such as the Evergreen MxPro.

More specifically, the Mediastones test runs a typical algorithm in a loop 5,300,000 times and records the amount of time taken to complete the test. The algorithm shown below is an ADD, AND, MUL operation followed by a shift-multiply-combine formula that is typical of a Matrix translation algorithm found in common applications. If the CPU being tested contains the MMX instruction set, then the MMX-optimized padd, pand, pmullw, and pmaddwd instructions are run. Otherwise, non-MMX CPUs use standard math operations. Once the total time to complete the operations is recorded, the Mediastones result is computed by dividing 5,300,000 by the total time (1/100's of a second) and multiplied by 10 (see formula below). The multiply factor of 10 allows Mediastones to be reported in quantities more typical of other performance tests, such as Dhrystones.

```
// Mediastones algorithm

starttime;
for(i = 0; i < 5300000; i++)
    a = b + c;
    a = b & c;
    a = b * c;
    a = ((b >> 16) * (c >> 16)) + ( (b * c) & 0xffff);
endtime;
totaltime = endtime - starttime;
result = ((5300000 * 10) / totaltime);
end
```

The MxPro INSTALL software uses the Mediastones test to display the result and to compare the performance of the MxPro to the original CPU in the system.



Ordering

Q. What is the warranty for the Evergreen MxPro?

A. 3 years. For specific warranty information visit www.evertech.com/mxprowar.html.

Q. How much does it cost? Where can I buy it?

A. Contact Evergreen at 541.757.0934 or visit our web site at www.evertech.com for ordering information.

Q. How do I contact technical support?

A. Evergreen offers technical support through our web site, email, fax, and telephone.

Home Page: www.evertech.com/support.html

Phone: 541.757.7341

Email: techsupport@evertech.com

Fax: 541.752.9851

Hours: 6am-6pm PST, 7 days a week